

REMARKS

Claims 1-8 and 10-12 are currently pending. Claims 1, 6-8 and 10-12 were rejected under 35 U.S.C. 103(a) as unpatentable over JP 355104393 to Hideaki (relying upon English Abstract supplied by Applicants) in view of U.S. Patent 4,487,613 to Yoshida et al. Claims 2-5 were rejected under 35 U.S.C. 103(a) as unpatentable over JP '393 in view of Yoshida et al. (as applied to claims 1 and 6 above) and further in view of U.S. Patent 2,430,050 to Gill.

The instant invention relates to acrylic acid alkyl ester mixtures containing a low proportion of sulphurous compounds, the use of these to odorize liquid gas. (See abstract and ¶ [0001]). The instant invention defines "liquid gas" to include automobile fuel and generally means gas that can be converted at low pressure into a liquid state. (See ¶¶ [0002] - [0004]) Amended independent Claims 1 and 10 require the odorant mixture to include one of norbornene, propionaldehyde, isovaleraldehyde, isovalerianic acid, 2-ethyl phenol, 4-ethyl phenol or 2-acetyl pyrazine. None of the references cited by the Examiner disclose these odorant mixtures.

THE CITED REFERENCES

Hideaki discloses a fuel gas odorant that consists of a specific odor-generating component (selected from methyl acrylate, ethyl acrylate, methyl methacrylate, allyl methacrylate, ethyl propionate, methyl n-butyrate, methyl isobutyrate, pulenyl acrylate), an acetylenic hydrocarbon (such as butyne-1, vinylacetylene, hexyne), and t-butylmercaptan.

Yoshida et al. discloses mixtures of 4-methyl-4-mercapto-2-pentanone or 2-methoxy-3-isobutyl pyra-zinc in admixture with other organic sulfur compounds for adding a detectable odor to combustible hydrocarbon gases and other gases suitable as fuels for heating, illuminating and cooking purposes. (Yoshida et al., column 1, lines 6-13)

Gill discloses alkyl mercaptan to add as a detectable odor to combustible or fuel gas. (Gill, column 1, lines 1-3) Gill discloses that odorant effectiveness can be improved by preventing polymerization of vaporized mercaptans by incorporating an inhibitor, such as cresol. (Gill, Column 4, lines 1-3)

THE CITED REFERENCES FAIL TO PRESENT A PRIMA FACIE CASE OF OBVIOUSNESS

It is axiomatic that a proper case of prima facie obviousness must cite prior art that either alone or in an allegedly obvious combination of teachings meets all of the limitations in the claimed invention. Here the cited references do not teach the claimed invention when considered alone or in the combinations suggested by the examiner. Consider the following deficiencies:

- None of the references cited by the examiner disclose, suggest or provide motivation one of ordinary skill to include in the odorant mixture one of norbornene, propionaldehyde, isovaleraldehyde, isovalerianic acid, 2-ethyl phenol, 4-ethyl phenol, 2-acetyl pyrazine.

- None of the references teach, suggest or provide a motivation to one of ordinary skill to include their respective odorant mixtures in liquid fuels. The references cited by the examiner only disclose odorants used in combination with vapor fuel gas, such as natural gas. In other words, the prior art does not teach that adding the claimed composition to a liquid fuel (as in claims 10-12) would be useful or desirable.

A proper case of prima facie obviousness of the claimed invention is not presented. Reconsideration and allowance are courteously solicited.

Respectfully submitted,

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